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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,516

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EXAMINER

LACLAIR, DARCY D

ART UNIT

PAPER NUMBER

1763

MAIL DATE

DELIVERY MODE

01/25/2012

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/591,516

Applicant(s)

ARAI ET AL.

Examiner

DARCY D. LACLAIR

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 5) ☒ Claim(s) 1-4 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1-4 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

### **DETAILED ACTION**

1. All outstanding rejections, except for those maintained below are withdrawn in light of the amendment filed on **10/25/2011**. Claims 1-4 are pending.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The new grounds of rejection set forth below are necessitated by applicant's amendment filed on **10/25/2011**. In particular, **Claims 1-4** have been amended to recite a resin pulley molded with a phenol molding resin. This limitation was not present in these claims at the time of the preceding Office Action. Thus, the following action is properly made **FINAL**.

### ***Double Patenting***

2. **Claims 1-4** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over **claims 1-8** of **U.S. Patent No. 6,716,907** in view of **Togashi et al. (US 5,064,881)** and **Amagai et al. (US 20030130438)**.

**With regard to Claims 1 and 3**, the conflicting patent requires that the resin is prepared in the form of a resin pulley molded (Claim 5-8) from a resol based phenolic resin composition comprising, per 100 parts of resin by weight, 40 to 100 parts by weight of inorganic fiber, 20 to 90 parts of a natural silica, and 1 to 15 parts of a rubber component. (Claim 1) Further, the conflicting patent requires that the natural silica powder is shaped like pulverized power. (Claim 3) The conflicting patent does not explicitly teach the use of a silica having a particle size of 0.5 to 15 microns. Togashi

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teaches an epoxy resin containing a phenol type resin, having a specific pulverized silica particle which has reduced mold shrinkage and improved precision in molding.

(Abstract) The silica used to reduce mold shrinkage and improve molding is a specific pulverized silica (see col 2 line 20) having an average particle size up to 8 microns, and a maximum particle size up to 60 microns, (see col 2 line 50-51) and a specific pulverized silica having a maximum particle size of 10 microns, and an average particle size of 1.8 microns is exemplified. (See col 9 line 51-52) This silica allows high filling while simultaneously maintaining flowability. (See col 4 line 32-50) Furthermore, surface roughness of the molded objects is reduced, along with reduced mold shrinkage. (See col 7 line 54-60) This silica is used in a composition further including a glass fiber. (See col 2 line 40) The conflicting patent teaches a silane coupling agent in order to improve the adhesion of the glass fiber filler to the phenolic resin, (see col 2 line 57) and Togashi teaches that a coupling agent such as  $\gamma$ -glycidoxypopyltrimethoxysilane can be added to the composition (see col 9 line 23-24) but neither explicitly teaches treating the silica powder with this agent. Amagai teaches that silicas such as natural silica and glass (see par [0110]) can be used in a phenol resin composition (see par [0086]) and that these benefit from surface treatment with a coupling agent such as  $\gamma$ -glycidoxypopyltrimethoxysilane and the like to improve conformability. (See par [0141]) It would be obvious to one of ordinary skill in the art to use the coupling agents taught by both the conflicting patent and Togashi in the manner described by Amagai in order to improve the adhesion of the silica filler to the phenol resin. Based on the similarities in the compositions, both including a phenol resin and

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glass fibers, it would be obvious to one of ordinary skill in the art to use a coupling agent treated small pulverized silica having a reduced particle size as a replacement for the conflicting patent's slightly larger silica in order to obtain good flowability and therefore good mold filling and reduced molding flaws, a reduced surface roughness, and a reduced mold shrinkage, which further results in reduced warping or misshaping of the molded article due to the shrinkage, as similar benefits would be expected.

**With respect to Claim 2**, attention is first directed at the discussion of Claim 1, above. The conflicting patent further requires that the inorganic fiber includes 50% or more by weight of glass fiber. (Claim 2)

**With respect to Claim 4**, attention is directed at the discussion of Claims 1-3, above.

### ***Claim Rejections - 35 USC § 103***

3. **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Asai et al. (US 2002/0123557)** in view of **Togashi et al. (US 5,064,881)** and **Amagai et al. (US 20030130438)**. .

**With regard to Claims 1 and 3**, Asai teaches a resin pulley molded from a resol based phenolic resin composition containing, per 100 parts of resin by weight, 40 to 100 parts by weight of inorganic fiber, 20 to 90 parts of a natural silica, and 1 to 15 parts of a rubber component. The natural silica powder is preferably shaped like pulverized power. (See abstract).

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Asai does not explicitly teach the use of a silica having a particle size of 0.5 to 15 microns.

Togashi teaches an epoxy resin containing a phenol type resin, having a specific pulverized silica particle which has reduced mold shrinkage and improved precision in molding. (Abstract) The silica used to reduce mold shrinkage and improve molding is a specific pulverized silica (see col 2 line 20) having an average particle size up to 8 microns, and a maximum particle size up to 60 microns, (see col 2 line 50-51) and a specific pulverized silica having a maximum particle size of 10 microns, and an average particle size of 1.8 microns is exemplified. (See col 9 line 51-52) This silica allows high filling while simultaneously maintaining flowability. (See col 4 line 32-50) Furthermore, surface roughness of the molded objects is reduced, along with reduced mold shrinkage. (See col 7 line 54-60) This silica is used in a composition further including a glass fiber. (See col 2 line 40) The conflicting patent teaches a silane coupling agent in order to improve the adhesion of the glass fiber filler to the phenolic resin, (see col 2 line 57) and Togashi teaches that a coupling agent such as  $\gamma$ -glycidoxypopyltrimethoxysilane can be added to the composition (see col 9 line 23-24) but neither explicitly teaches treating the silica powder with this agent. Amagai teaches that silicas such as natural silica and glass (see par [0110]) can be used in a phenol resin composition (see par [0086]) and that these benefit from surface treatment with a coupling agent such as  $\gamma$ -glycidoxypopyltrimethoxysilane and the like to improve conformability. (See par [0141]) It would be obvious to one of ordinary skill in the art to use the coupling agents taught by both the conflicting patent and Togashi in the manner

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described by Amagai in order to improve the adhesion of the silica filler to the phenol resin. Based on the similarities in the compositions, both including a phenol resin and glass fibers, it would be obvious to one of ordinary skill in the art to use a coupling agent treated small pulverized silica having a reduced particle size as a replacement for the conflicting patent's slightly larger silica in order to obtain good flowability and therefore good mold filling and reduced molding flaws, a reduced surface roughness, and a reduced mold shrinkage, which further results in reduced warping or misshaping of the molded article due to the shrinkage, as similar benefits would be expected.

**With respect to Claim 2**, attention is first directed at the discussion of Claim 1, above. Asai teaches that it is preferred that the inorganic fiber includes 50% or more by weight of glass fiber. (See abstract)

**With respect to Claim 4**, attention is directed at the discussion of Claims 1-3, above.

### ***Response to Arguments***

4. Applicant's arguments filed **5/12/2011** have been fully considered. Specifically, applicant argues

**(A)** With respect to both the obviousness type double patenting rejection and the 103 rejection, Applicant's field of endeavor is a phenol resin molding material used in automobile engines. Neither Togashi nor Amagi are in Applicant's field of endeavor as neither are directed to phenol resin molding materials used in automobile engine components. Togashi is directed to a resin composition used as a sealing material, and

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Amagai is directed to resins for use in electronics fields. In addition these references are not reasonably pertinent to the particular problem with which the inventor was concerned, Specifically, improved abrasion resistance and reducing the large load applied to production facilities such as molds and molding machines.

5. **With respect to argument (A)**, applicant's arguments have been considered but are **not persuasive**. It is noted that "a reference in a field different from that of applicant's endeavor may be reasonably pertinent if it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his or her invention as a whole." (See MPEP 2141.01(a)[R-6]) Furthermore, in combining references, it is necessary to determine whether one of ordinary skill in the art would have combined the references in question as pertinent prior art. Obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, Asai teaches a molded item made from resol based phenolic resin composition and desires a pulverized natural silica powder. Togashi teaches a phenol type resin using a specifically sized pulverized natural silica powder, and explains why the silica will improve commonly known problems in molding such as mold shrinkage,



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as well as improving the mold precision and the surface of the molded objects, as well as enhancing the flowability of the polymer during molding processes. Although the end use of the product varies, both are analogous polymers, and both applications are concerned with molding these polymers. Given that Asai directs the reader to silica appropriate for a phenol resin molding, and Togashi provides such a silica and teaches an improvement to poor molding, Togashi is certainly reasonably pertinent to the issue of preparing the molding of Asai.

Asai and Togashi both teach the use of a coupling agent to improve the interaction of the fillers (silica and glass) with the phenol resin. Asai is silent with respect to the exact coupling agent used, and to the order in which these components are combined; specifically with respect to subjecting the silica powder to the treatment as a distinct step. While the silica would necessarily be exposed to the coupling agent by the teachings of Asai when the composition was combined, Asai is silent with respect to these steps. Nevertheless, Asai does direct the reader to use a coupling agent in order to improve the composition. Amagai teaches that silicas such as natural silica and glass (see par [0110]) can be used in a phenol resin composition (see par [0086]) and that these benefit from surface treatment with a coupling agent such as  $\gamma$ -glycidoxypropyltrimethoxysilane and the like to improve conformability. (See par [0141]) In regards to coupling agents, the function of these additives are to improve the interaction between a polymer and a filler which are normally not completely compatible. Therefore the driving feature of a coupling agent is a good interaction with both the resin in question and the filler in question. Thus the field of endeavor to which one of ordinary

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skill of art would limit themselves when considering a teaching of a coupling agent would be polymer and filler compositions which were consistent with the one in question, as this would direct the reader to a composition sharing chemical similarity with the composition in question. Thus one of ordinary skill in the art would look to the teachings of Amagai with respect to the coupling agent because Amagai shares both the resin and the filler with both Asai and Togashi and thus any coupling agent taught by Amagai would be functional in these compositions.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darcy D. LaClair whose telephone number is (571)270-5462. The examiner can normally be reached on Monday-Friday 8:30-6.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MILTON I CANO/  
Supervisory Patent Examiner, Art Unit 1763

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Examiner  
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/DDL/